# CLAIMS

1. Process for producing metal-matrix composite materials comprising at least one portion of magnesium or of a magnesium alloy and at least one production step in which thixomolding takes place,

characterized in that a $Mg_2Si$ phase with a volumetric content of at least 2% is dispersed into the metal matrix.

2. Process as claimed in claim 1, wherein the metal matrix comprises magnesium or a magnesium alloy.

3. Process as claimed in claim 1 or 2, wherein a granulate of silicon or a silicon alloy and a granulate of magnesium or of a magnesium alloy are processed jointly in a thixomolding process.

4. Process as claimed in one of claims 1 to 3, wherein the amount and/or the size of the $Mg_2Si$ crystallites which form and/or the silicon content of the composite material are determined via the size and/or the amount of the particles of silicon or of the silicon alloy.

5. Process as claimed in one of claims 1 to 4, wherein in the thixomolding process the cast body is produced from the metal-matrix composite material which is then further processed.

6. Process as claimed in claim 5, wherein the cast body is formed from the metal-matrix composite material subsequently in at least one process step.

7. Process as claimed in claim 6, wherein the cast body is formed from the metal-matrix composite material subsequently in at least one forging process and/or extrusion process.

8. Process as claimed in one of claims 1 to 7, wherein in the production of the composite material addition of at least roughly 2% by weight Si and at most roughly 15% by weight Si takes

place.

9. Process as claimed in one of claims 1 to 8, wherein a $Mg_2Si$ phase with a volumetric content of at least roughly 5% to roughly at most roughly 40% is dispersed into a metal matrix.

10. Process as claimed in one of claims 1 to 9, wherein in the production of metal-matrix composite material one of the standard magnesium alloys AZ91, AM50, MR1230D, MR1253M or a magnesium die casting alloy is used.

11. Process as claimed in one of claims 1 to 10, wherein after adding Si the heating rate of the thixomolding device is reduced when the melt first forms.

12. Metal-matrix composite material, wherein it was produced according to a process as claimed in one of claims 1 to 11.

13. Component for a motor vehicle, wherein it comprises at least one metal-matrix composite material which was produced according to a process as claimed in one of claims 1 to 11.

14. Use of a metal-matrix composite material as claimed in claim 12 for producing engine parts, especially pistons, bushings for shafts, cylinders, other rotationally symmetrical components or brake disks for motor vehicles.